

MANAGING DUST EMISSIONS FROM MINE TO PORT

Adopting a whole-of-coal-chain dust management strategy should help Australian coal operators reduce their dust emissions and better meet community expectations.

A key to this approach is an understanding of the dustiness characteristics of each coal type, particularly the dust extinction moisture level (DEM), and the relationship between dustiness and moisture content. DEM is the moisture at which a dustiness index of 10 is achieved or, in practical terms, no dust emissions. Maintaining the moisture content above the DEM level is highly effective in reducing dust emission during handling operations.

A review of current best practice in dust control techniques across the coal industry has identified critical measures that should be undertaken on the mine; during rail transport; on arrival at the port; during stacking, reclaiming and shiploading; and while the coal is stockpiled at the port.

These measures include:

- Regularly spraying haul roads and other trafficked areas on site with water or water containing a dust suppressant;
- Keeping coal above its DEM level during transport and handling operations;
- Applying a veneer chemical treatment to the coal surface in each rail wagon prior to long distance rail transport;
- Installing moisture monitoring equipment at rail discharge facilities;
- Using calibrated water sprays at the rail discharge facilities only when necessary to maintain DEM levels without exceeding contract moisture limits;
- Using chemical agglomeration to reduce fines content in situations where dust emissions can't be controlled by moisture content;
- Establishing a minimum discharge height for stacking;
- Using misting sprays on conveyor transfers;
- Using stockyard sprays on stockpiles under most weather conditions;
- Application of chemical surface veneer to stockpiles when very adverse weather conditions are forecast.

Introspec Consulting Director John Planner said effectively managing dust emission without devaluing coal properties required a scientific approach to controlling moisture content.

"There have been significant developments in dust management techniques over the past decade. When I first started looking at managing dust emissions, the main industry approach was to hit the coal with water which caused complications with contract moisture content. With effective moisture monitoring, if mines keep their coal products above the appropriate DEM levels during transport to the port, it is highly unlikely that coal delivered to the bulk carrier will be above the contract limit," he said.

John has made a series of recommendations for further action, including changes to existing Australian Standards and updating coal source emissions data.

Industry Monitor Chris Dempsey said all companies should conduct DEM testing on each of their products, and continually monitor actual total moisture at sampling points along the coal chain.

"Chemical veneering of product stocks at Dalrymple Bay Coal Terminal has been in place for some time for those coals that are below DEM or are exposed to high winds. Queensland Rail is also now rolling out wagon veneering to minimise dust lift-off during transit from mine to port. Producers must evaluate what options they need to take to avoid environmental impacts to the neighbours near their operations," he said.

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